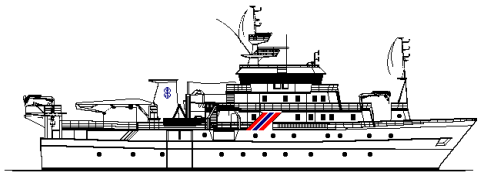
NANSEN PROJECT



Country: Angola

Research vessel: R/V DR. FRIDTJOF NANSEN

Survey number: 2008402

Number of days: 34

General objectives: Survey of the demersal resources of Angola

	Port	Date	Coverage	Specific objectives
Departure	Walvis Bay, Namibia	10 March 2008	Angola	• To survey, map and describe the distribution, composition and abundance of the main demersal species, with special emphasis on seabreams (Sparidae), croakers (Sciaenidae), grunts (Haemulidae), groupers (Serranidae), hakes (Merlucciidae) and shrimps (*Parapenaeus longirostris* and *Aristeus varidens*) on the Angolan shelf and slope (down to 800 m), from Cunene River (17°14‟S) to Tombua (15°40‟S), and from Benguela (12°35‟S) to Congo River (06°00‟S) using bottom trawl and the swept-area method. • To collect biological data as length, weight, sex and maturity of Dentex macrophthalmus, D. angolensis, Pagellus bellottii, Pseudotolithus typus, Merluccius polli, A. varidens, P. longirostris, Chaceon maritae and Panulirus regius, and to collect the stomach contents and gonads for some species such as Dentex angolensis, Pagellus bellottii, Pseudotolithus senegalensis, Umbrina canariensis and Brachydeuterus auritus, for future analyses in the INIP Lab. • To monitor the general hydrographic conditions using a CTD-sonde on each trawl station and map the temperature, salinity and oxygen along standard INIP hydrographic profiles.
Arrival	Luanda, Angola	13 April 2008		

Cruise leader: Silvi Nsiangango (10/3-26/3, Local Cruise Leader), Kumbi Kilongo (26/3-13/4, Local Cruise Leader), Åge Høines (10/3-26/3, Cruise Leader), Else Torstensen (26/3-13/4, Cruise leader)

Participants:

From INIP, Silvi Nsiangango (Local Cruise Leader), Kumbi Kilongo, (Local Cruise Leader), Virgílio Estévão, Domingos Pedro, Pedro Panzo, Erikson Saquenia, Vanaquissa Jonico (Benguela), Eusébio dos Santos, Paula Fária, Filipe Vianda, Henriette Lutuba, Gisela Ramos, David Kisungo (Benguela), Fátima Delicado

From IMR, **Norway**: Åge Høines (Cruise Leader), Else Torstensen (Cruise leader), Magne Olsen, Diana Zaera, Jan Frode Wilhelmsen, Andreas Nieuwejaar.

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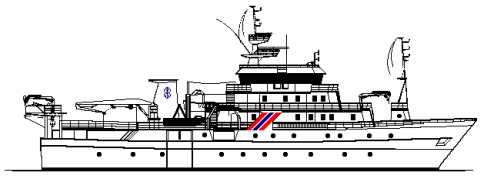


Summary of the results:

From 10 March to 13 April the 2008 demersal resource survey off Angola was successfully carried out using R/V "Dr. Fridtjof Nansen". Except from the area between Tombua and Benguela, which is unsuitable for trawling due to poor bottom conditions, the shelf and upper slope (20-800 m) from Cunene River to Congo River was covered. In total, 199 trawl stations were conducted of which 193 were valid and used in biomass estimation of the demersal stocks. To map the oceanographic conditions 310 CTD samples were carried out.

Hydrographic conditions

The demersal surveys in March are coincident with the late phase of the wet season, which causes low salinity in the surface waters on the shelf off northern and central Angola due to the freshwater coming for the coastal rivers. Signal of up welling was observed in the southern region. In the central region, the temperature varied between 24–28ºC, and the lowest temperature (24ºC) was observed around Cabo Ledo. The salinity values ranged between 35.1 and 35.7, maybe related to an upwelling situation. In the northern region the temperature was lowest close to the river's mouth (about 24°C), while offshore it was around 29 °C. Inshore waters presented low salinity values, particularly around the river's mouth (29) and increasing at the same latitude to 33 further offshore. The influence of the river's plume was observed down to 8.5°S with a salinity of 33.5, while further south there was no sign of freshwater.

Biomass estimates

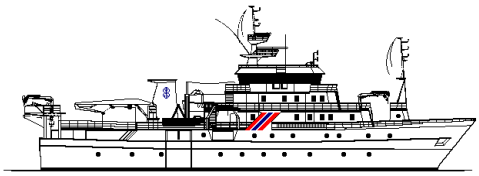
Seabreams: The seabream biomass estimate in the southern region was about 9 150 tonnes and consisted almost entirely of *D. macrophthalmus*. This is a marked decrease from last year, and the lowest in the timeseries. In the central and northern regions, the biomass estimate of seabreams in 2008 was about 21 227 tonnes, which is a 14% reduction from 2007. *D. macrophthalmus* and *D. angolensis* comprised 15% and 32%, respectively, of the 2008 estimate. Other abundant seabreams are *P. bellottii*, *D. canariensis* and *D. barnardi*. The biomass estimates of seabreams have fluctuated since 2000, and there is no clear long-term trend in the time series.

Hakes: *M. capensis* is generally the dominating hake species in the south, and Angola shares this stock with Namibia. However, whilst no Benguela hake (*M. polli*) was caught on the southern shelf during the 2006 survey the species contributed to about 65% of the biomass in 2008. The total biomass estimate of hake (*M. capensis and M. polli*) on the southern shelf and slope in 2008 were 1 700 and 950 tonnes, respectively. Only one valid station was carried out on the slope between 200 and 600 meters which make the 2008 estimate for the slope unreliable. On the shelf the hake abundance has declined annually since 2003, and the 2008 estimate is the lowest observed since 2000. The decrease is a reason for concern. In the central and northern regions, *M. polli* is the only hake species. Here, the estimated biomass of hake (*M. polli*) was 11 979 tonnes, which is a 7% increase from the 2007 estimate. Furthermore, the 2008 estimate is about 62% lower than the 2004 estimate.

Shrimps: The two commercially important shrimp species *P. longirostris* and *A. varidens* are never found in high densities south of Tombua, and they were not caught in 2006 or 2007. However, in 2008 both *P. longirostris* and *A. varidens* were caught in small quantities in the southern region. In 2008, the biomass estimate of *P. longirostris* for the central and northern regions was 1 622 tonnes, which is a 21% increase from the 2007 estimate. The high CV indicates that the estimate is relatively uncertain. The 2008 estimate of *A. varidens* was 1 508 tonnes, which is a 47% increase from 2007.

Grunts: Commercially important grunt species are *P. incisus* and *P. rogeri*, but no grunts were caught in the southern region. The biomass estimate of grunts in the central and northern regions in 2008 was 7 411 tonnes, which is a 57% reduction from 2007 (17 242 tonnes), which is the highest biomass estimate registered since 1985.

Croakers: South of Tombua, the biomasses of the croakers have varied considerably between surveys during the last years, therefore, no clear trend in the time series can be seen. However, the 2008 estimate of 400 tonnes is a large decrease from last year's estimate of 4 200 tonnes and it is the lowest in the timeseries. The estimates of *Umbrina canariensis,* which is one of the most important croakers, also show large annual variation and there is no evident trend in the time series. The biomass estimate of croakers, mainly *U. canariensis*, *A. aequidens, P. senegalensis* and *P. typus*, in the central and northern regions was



about 12 684 tonnes in 2008, which is a 6% increase from 2007. *Groupers and snappers* Groupers and snappers are not distributed in the region south of Tombua. In the central and northern regions the biomass estimates for these groups are relatively imprecise as shown by the high CVs values. The 2008 biomass estimate of groupers increased from 950 in 2007 to 1 187 tonnes, while the biomass estimate of snappers dropped to 90 tonnes from 113 tonnes in 2007. The estimates in the time series show large fluctuations, making it difficult to identify any trend and conclude on the current state of these stocks.
Pelagic species: For the pelagic species, the estimates of the biomass are characterized by the high variability throughout the years, particularly for horse mackerel, hairtail and barracuda. The bottom trawl is not an adequate sampling gear for the pelagic fish species; therefore no certain conclusion may be drawn for these resources. More adequate results are achieved from the acoustic surveys conducted in July and August.

Report: status: final References:

Å. Høines, E. Torstensen, D. Zaera, M. Olsen, S. Nsiangango, K. Kilongo (2008). **CRUISE REPORTS "DR. FRIDTJOF NANSEN" SURVEYS OF THE FISH RESOURCES OF ANGOLA, Survey of the demersal resources**, 10 March – 13 April 2008**.**

Constraints/Comments: